USEPA TRANSMITTAL INFORMATION FOR HYDE PARK/BLOODY RUN DOCUMENTS

TO: W. WALSH
N. LEWIS
J. JOSEPHS
G. KUNTZ

FROM: Dr. Joseph Spatola, USEPA Program Coordinator for Hyde Park/Bloody Run
U.S. Environmental Protection Agency
Region II
Office of Emergency and Remedial Response, Hazardous Waste Sites Branch
26 Federal Plaza
New York, New York 10278
FTS 264-4183

- [ ] For your review
- [x] For your information
- [ ] Draft plans, specifications, and/or protocols
- [ ] Draft report
- [ ] Final plans, specifications, and/or protocols
- [ ] Final report
- [ ] Other:

Date of correspondence 8-13-84

Date of E & E transmittal 8-16-84

Activity Code (file reference): N-2/3

Description of Attachment: LETTER OF AUGUST 13 1984 From J. NICHTER (OCC) to N. NOSENCHUCK (NYS DEC) and J. SPATOLA (USEPA) REGARDING: Hyde PARK REMEDIAL Project - PERMANENT LEACHATE STORAGE AND HANDLING FACILITY.

Consent Decree Reference(s): para 7, p 11. Addendum I, para E, pp I-25 thru I-36.

Review Schedule:

Date Item Received From OCC	Date Comments Due to Dr. Spatola*	Exchange Comments With State	Meet With State/Resolve Comments	Date EPA/State Comments Due to OCC	EPA/State Meet With OCC to Resolve Comments

Comments:

*Please send a copy of all technical comments to: Ms. Julia Schwartz
c/o Ecology and Environment, Inc.
195 Sugg Road, P.O. Box D
Buffalo, NY 14225

XC (w/o attachments):
F. Russo
R. Holmes
R. Stecik (NUS)
G. Rusk

XC (w/attachments):
R. OGG
S. GIANTE
J. WILCOX (E & E Task Leader)
J. Schwartz
NU-434 files N-2/3. NU-432 File E & E Corres.

RECEIVED

AUG 1 5 1984

Occidental Chemical Corporation

August 13, 1984

Norman H. Nosenchuck, P.E.
Director Division of Solid Waste
NYS Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Joseph Spatola, PhD
Hyde Park Program Coordinator
United States EPA, Region II
26 Federal Plaza
New York, New York 10278

Subject: Hyde Park Remedial Project -- Permanent Leachate Storage and Handling Facility

Dear Sirs:

The EPA/State comments of May 2, 1984 on the permanent leachate facility were reviewed by Occidental Chemical Corporation (OCC) and subsequently discussed with EPA/State on July 13, 1984. The attached response of OCC addresses all of the comments of EPA/State.

If you have any questions on this response, please call me at (716) 286-3609.

Respectfully,

John R. Nichter

John R. Nichter
Hyde Park Coordinator

2321eJRNbma
Attachments

copies: J. Slack - 5 copies
J. Schwartz - 5 copies
P. Buechi - 3 copies

OXY

Special Environmental Programs
Hooker Chemical Center, 360 Rainbow Boulevard South, Box 728, Niagara Falls, New York 14302 716/286-3000

Hyde Park Remedial Program: Permanent Leachate Storage and Handling Facility - OCC Response to EPA/State Comments, Dated May 2, 1984

I. TECHNICAL COMMENTS

A. General

1A.1 The following Section will be included in the Operations Manual.

3.13.11 Emergency Tie-In Points

There are several blanked of valves located throughout the system. The valves are locked out and are only to be used in case of emergency or a need to isolate a particular piece of equipment. The following gives a description of when a particular valve could be utilized.

- Valve #6 (located between the Wet Wells and the Organic Decant Tank) is to be used when Wet Wells A and B must be pumped and the Leachate Collection System is not operational. The lock and blind flange will be removed from Valve #6 and a truck suction piping will be bolted into place. Valve #5 will be closed and then valve #6 will be opened and the leachate from the wet wells will discharge into the truck.

- Valve #11 is to be used for transferring organics out of the decant tank if the leachate transfer pump is out of service and it becomes necessary to dispose of the organics. This is done by closing Valves #10 and #12, hooking an emergency pump to the flange on Valve #11 and then open Valves #9 and #11.

  This connection can also be used when the leachate storage tank is out of service. By closing Valve #9 and #12 then opening Valve #10 the organic decant tank becomes a dual purpose, temporary leachate storage tank and organic decant tank.

- o Three emergency connections exist on the Leachate Tank at Valves #23, #68 and a blind flange connections on the suction line to leachate handling pump A. Both points can be used to pump down the Leachate Storage Tank if Leachate Transfer Pumps A and B are out of service. The discharge point at Valve #23 is to be used if the float inside the tank fails and Valve #68 can be used all other times.

- o The emergency connection on the overflow between the organic decant tank and the leachate storage tank is to be used when it is required to bypass the decant tank. Discharge from the wet wells can be directed into the storage tank by hooking a transfer hose from Valve #6 to Valve #67, closing Valve #5 and then opening both Valves #6 and #67.

- o The final emergency pump hookup is at the sump inside the pump building. If the sump pump fails, an emergency pump an be installed in the sump with the discharge of the pump hooked to Valve #49.

  This emergency discharge point can also be utilized to pump the contents of a spill in the dike, into tankers by connecting a hose to Valve #49 and closing Valve #50. The sump pump will then discharge into the tankers.

1A.2 Valves will be installed and blanked off in both the [T(E) 8" WCC-MD-100] and [T(E) 4" WCC-MD-115]. Their operation is discused in 1A.1.

1A.3 The tie-in point on [T(E) 4" WCC-MD-115] will be added to the smaller flow sheets.

1A.4 The flange and a blank, which does appear in the detailed piping drawings, will be added to the flow sheet.

1A.5 An emergency hookup for a process tie-in directly into the city water is not permitted by city ordinance. If process water is lost, equipment will shutdown.

1A.6 An alarm to indicate low pressure of process water will be installed.

B. Detailed Comments

#8 Emergency pumps and equipment will be based on general purpose (non-hazardous) electrical classifications. See comment 21.

16A. See Attachment "D" for calculations of dike volumes.

B. Detailed Comments (Continued)

16C. See comment 16A.

16F. A potential leak from the proposed decant tank or the proposed storage tank will not fall outside the spill control area of the dike and truck loading areas. All spills will be contained within these areas, collected and treated.

OCC recognizes that the future storage tank could present a potential problem and would propose a doubled walled vessel or extending the height of the dike wall to prevent a splash or spill outside the diked area.

18A OCC agrees with the EPA/State calculations concerning the up flow velocity of 23.2 ft./hr. for the given condition of 250 gpm. This corresponds to a particle size of 53 microns being carried over at the upflow velocity of 23.2 ft./hr. However since the 250 gpm flow is based on both leachate wet well pumps operating in conjunction with the sump pump, the 250 gpm is a maximum flow which will be reached only occasionally. In addition provisions have been made in the leachate storage tank for any carry over which might occur during such maximum flow.

1.) The suction lines are floating on the top of the liquid level preventing settled particles from being pumped with the leachate.

2.) Bottom discharge and recycle piping are provided on the leachate tank to periodically pump the carried over material back to the decant tank.

3.) Filters are provided down stream of the pumps to take out all carried over particles greater than 10 microns.

4.) Any carryover smaller than 10 microns will be treated with the leachate at a permitted facility.

18B. Experience with similar filters at OCC's Niagara Falls Leachate Treatment Facility has shown that one operator can safely change the bag filter. Guidelines usually considered for such an operations include:

1. Do the objects to be lifted or moved require two men?

2. Will the hazardous materials involved cause immediate disability of the operator because of a sudden release or failure of protective equipment.

OCC cannot envision any probable incident in this operation which would prevent the operator from calling for assistance.

B. Detailed Comments (Continued)

21. The response by OCC in their December 20, 1983 was incorrect. In the absence of any data which would indicate otherwise and the fact that non-aqueous phase organics have been tested and indicate an open cup flash point of 125°F, this liquid is classified as a combustible liquid Class II which requires General Purpose Electrical Equipment. See OCC response to comments from EPA/State of May 3, 1983 dated July 1983.

23. See Attachment "A".

25A. OCC will monitor the carbon canistors daily for a minimum of 60 days using an HNu meter.

B. Based on the attached letter (Attachment "B") from the TIGG Corporation, OCC does not feel flame arrestors are required.

C. Included as Attachment "C" is a copy of the information that was previously submitted to the New York State Department of Environmental Conservation in regards to the OCC permit application to Construct and Operate a Hazardous Waste Facility and to Construct and Operate an Air Contamination Source. (Reference NYSDEC Application # 90-83-0310.)

D. OCC intends to use the Wash Facility for cleaning all construction equipment. The discharge quality of the air through the FARR Filter is the determining factor of the cleaning operation not the piece of equipment.

E. As previously described in OCC's July, 1983 responses to comments from: EPA/State dated May 3, 1983; Schedule F, 9th page, the unit will be a TIGG NIXTOX #N1000.

F. Louvers open when the fan is in service providing adequate ventilation, daily inspections of equipment and monitoring of discharge air will provide safeguards of the system and OCC will enclose NIXTOX canistors in metal cabinets which vent directly to the outside.

G. Condensation traps will be installed.

27. When OCC originally submitted the corrosion data it was the intent to begin constuction in early 1984, preventing a sufficient length of time to complete a longer (6 month) test of the materials in question. With previous corrosion knowledge, manufactures data and the 66 day test, OCC felt confident that the vinyl ester series of plastics were completely adequate for the intended use. However due to the extremely long approval process of the Leachate Storage and Handling Facility Plans and Protocols, OCC feels an additional six month minimum corrosion testing program would in no way delay the ultimate installation of the permanent Leachate Storage and Handling Facility. Therefore OCC will begin the extended testing program.

B. Detailed Comments (Continued)

31. The EPA/State assumption is correct.

New Comment (55)

The quality assurance protocols approved by EPA/State under the settlement agreement will be included in the final RCRA, Part B application. OCC has previously discussed the most useful data for characterizing the leachate from a landfill. Many of the components present cannot be identified and those which can be identified fluctuate with time. It is common engineering practice in such instances to work with a typical analysis. Based on historical data for disposal purposes the most current analysis should be used.

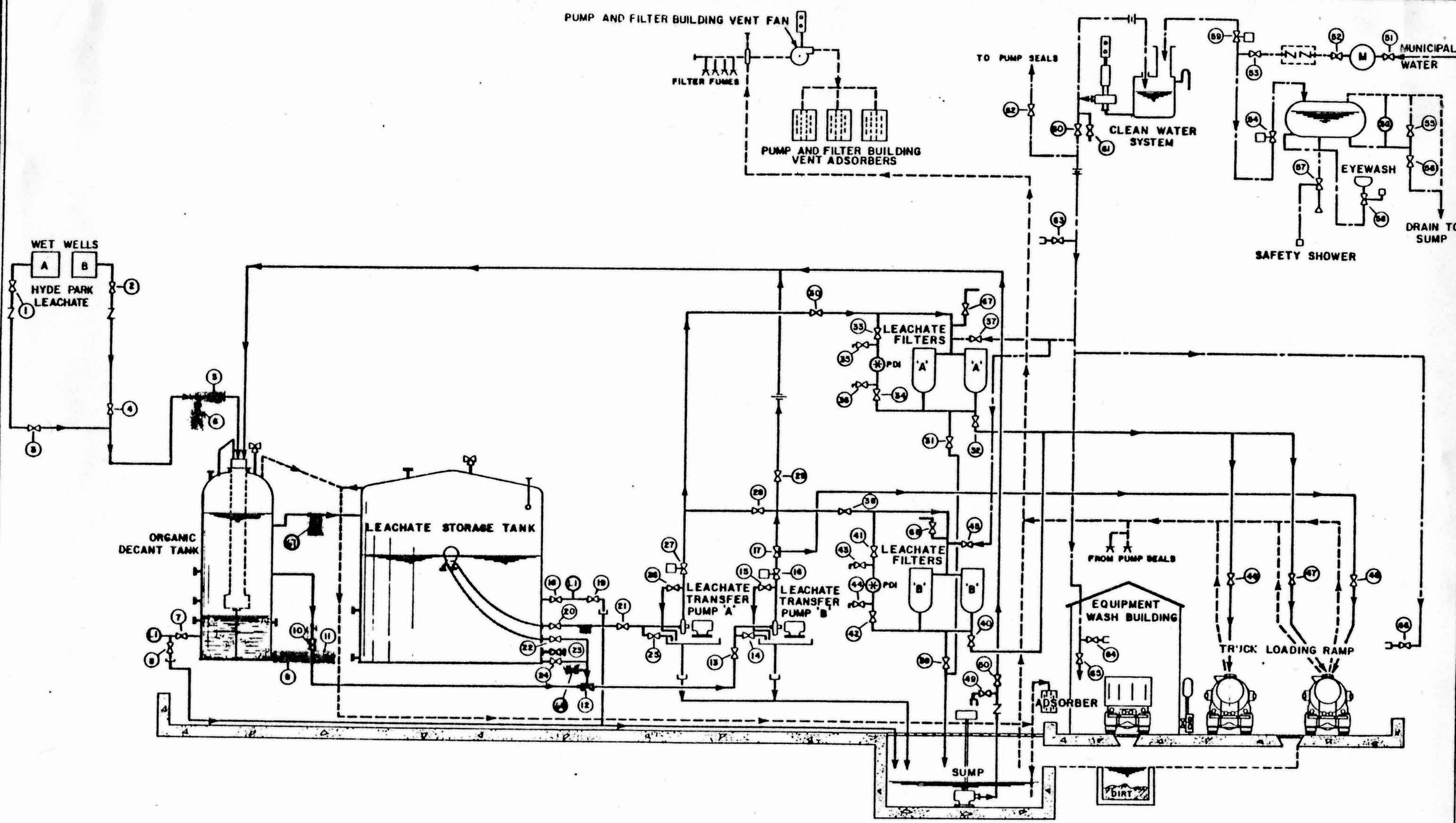
64. A copy of Appendices E & J Analytical Protocols will be submitted in the final RCRA application.

68 Once two-thirds of the corrosion allowance is exhausted tank inspection will be increased to once per year.

76C. OCC has a single management training program for supervisors and professional personnel. The program contains the following program elements:

1. Leadership and Administration
2. Management Training
3. Planned Inspections
4. Job Procedures and Practices
5. Accident/Incident Investigation
6. Planned Job Observation
7. Rules, Regulations and Practices
8. Skill Training
9. Protective Equipment
10. Program Assessment
11. Purchasing and Engineering Controls
12. Personal Communications
13. Safety Meetings
14. Fire Protection
15. Emergency Preparedness
16. General Promotion

Our Corporate Environmental, Health & Safety Staff prepares training modules for the various program elements which are utilized by the line management organization for safety training which becomes an integral part of management training.



HYDE PARK LEACHATE STORAGE & HANDLING FACILITY

Occidental Chemical Corporation

1069 - 2/02/83

ATTACHMENT H

Occidental Chemical Corporation

Central Engineering

MEMO

To J. A. Scarf

Date June 29, 1984

From D. J. Hadley

Subject Hyde Park Tank Venting Velocities
80-817

Copies To: C. D. Rhodes

As per your request, the peak air velocities from the conservation vents on the Organic Decant Tank and the Leachate Storage Tank have been calculated. Also calculated were the internal tank velocities during venting, based on the cross sectional area of each tank. This internal velocity would determine the amount of entrainment carried to the conservation vents. These velocities are shown below.

	Organic Decant Tank	Leachate Storage Tank
Peak Vent Flow	0.78 cfs	0.78 cfs
Conservation Vent Outlet Velocity	8.8 fps	3.9 fps
Tank Internal Velocity	0.009 fps	0.001 fps

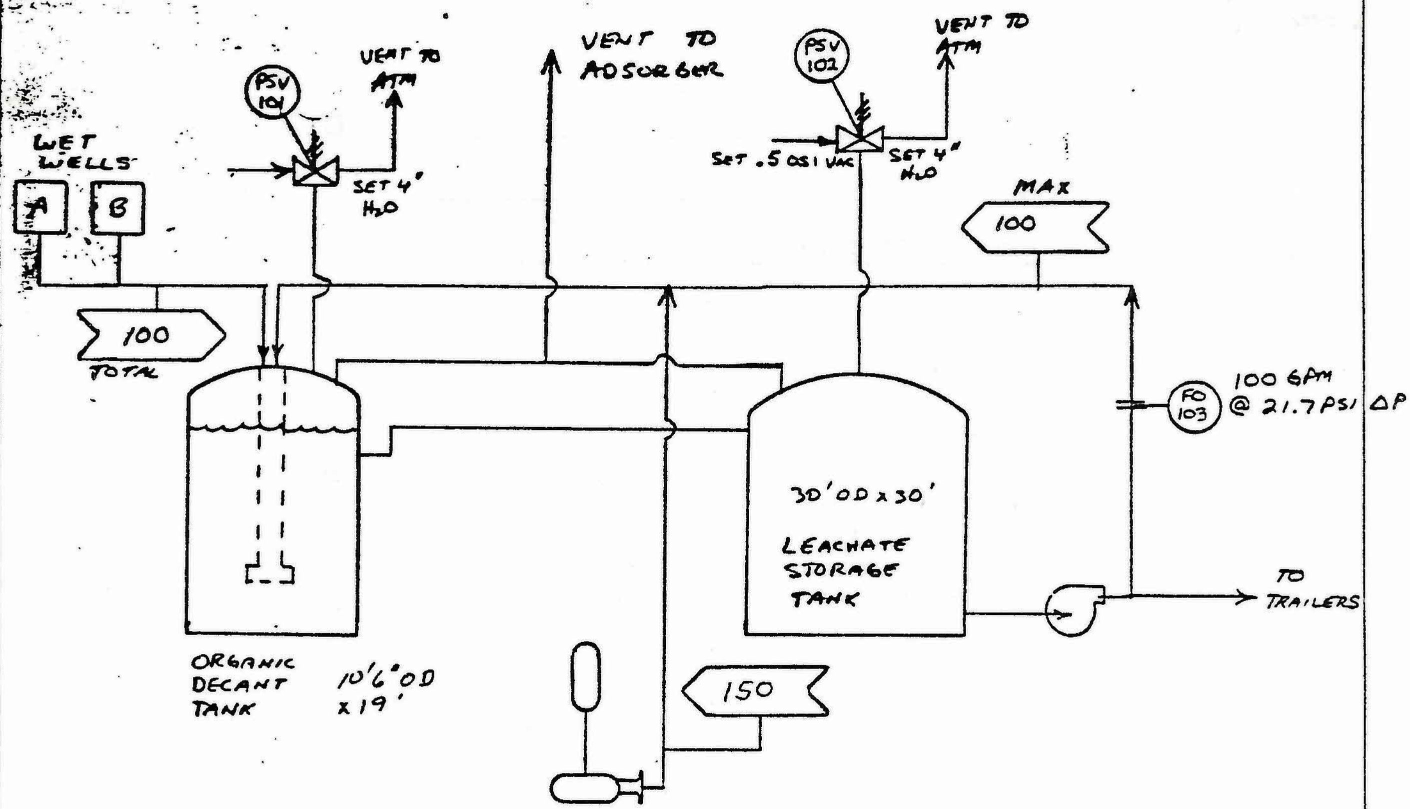
Based on the low velocities inside the tanks, entrainment will not occur. A disentrainment vessel downstream of the conservation vents will not be required.

The calculations are attached for your reference.

D. J. Hadley

D. J. Hadley
Process Engineer

0629DJH/rn



CASE 1 ORGANIC DECANT TANK

BASIS: 1. NO LIQUID FLOW OUT OF TANK
2. VENT TO ADSORBER PLUGGED @ TANK

INFLOW:		
	WET WELLS	100 GPM
	SUMP PUMP	150 "
	ORGANIC RECYCLE	100 GPM
		350 GPM

$$V = \frac{350\ GAL}{MIN} \times \frac{ft^3}{7.48\ GAL} = 46.8\ ft^3/MIN = .78\ ft^3/SEC$$
$$= 2807\ ft^3/HR$$

THIS FLOW MUST PASS THROUGH CONSERVATION VENT PSV-101

PSV-101 ⇒ GROTH 1200-04-34-T00 ⇒ 4" NOMINAL SIZE

@ 4" H_2O SET PRESSURE RELIEF CAPACITY = 40500 ft^3/HR

4" SCH 40 $d = 4.026$ IN $D = .3355$ ft $A = .08840\ ft^2$

$$v_{OUT} = \frac{.78\ ft^3}{SEC} \times \frac{1}{.08840\ ft^2} = 8.82\ ft/sec$$

$$\text{TANK AREA} = \frac{\pi}{4} D^2 = \frac{\pi}{4} 10.5^2 = 86.6\ ft^2$$

$$v_{in}\ (\text{BASED ON TANK AREA}) = \frac{.78\ ft^3}{SEC} \times \frac{1}{86.6\ ft^2} = .009\ ft/sec$$

∴ THIS VELOCITY TOO LOW TO ENTRAIN ANY LIQUID TO PSV-101. DISENTRAINMENT NOT REQUIRED AFTER PSV-101.

CASE 2 LEACHATE STORAGE TANK

BASIS: 1. NO LIQUID FLOW OUT OF TANK FOR INSTANT
(NOTE: NOT REALLY POSSIBLE BECAUSE 100 GPM RECYCLE MUST COME FROM WITHIN SYSTEM)

2. VENTS OUT OF TANK PLUGGED.

INFLOW:		
	WET WELLS	100 GPM
	SUMP PUMP	150
	ORGANIC RECYCLE	100
		350 GPM

$$V = \frac{350\ gal}{MIN} \times \frac{ft^3}{7.48\ GAL} = 46.8\ ft^3/MIN = .78\ ft^3/SEC$$
$$= 2807\ ft^3/HR$$

THIS FLOW MUST PASS THROUGH CONSERVATION VENT PSV-102

PSV 102 ⇒ GROTH 1200-06-34-T00 ⇒ 6" NOMINAL SIZE

@ 4" H_2O SET PRESSURE RELIEF CAPACITY = 92500 ft^3/HR

6" SCH 40 PIPE: $d = 6.065$ IN $D = .5054$ ft $A = .2006\ ft^2$

$$v_{out} = \frac{.78\ ft^3}{SEC} \times \frac{1}{.2006\ ft^2} = 3.9\ ft/SEC$$

TANK AREA = $\frac{\pi}{4} D^2 = \frac{\pi}{4} 30^2 = 707.9 \text{ ft}^2$

N_m (BASED ON TANK AREA) = $\frac{.78 \text{ ft}^3}{\text{sec}} \times \frac{1}{707.9 \text{ ft}^2} = .001 \text{ ft/sec}$

$\therefore$ N_m TOO LOW TO ENTRAIN ANY LIQUID TO PSV-102.

DISENTRAINMENT NOT REQUIRED AFTER PSV-102.

ATTACHMENT B

TIGG CORPORATION

Box 11661 • Pittsburgh, Pennsylvania 15228 • Telephone: (412) 563-4300 • Telex: 866338 TIGGCORP PGH • Cable: TIGGCOR PITTSBURGH

June 8, 1984

Mr. John Scarf
Project Engineer OCC
Occidential Chemical Corporation
Hooker Chemical Center
Box 728
Niagara Falls, NY 14302

Dear Mr. Scarf:

Thank you for your letter of June 4, 1984 concerning the question of ketone reactions with activated carbon and our caution statements in our literature.

As we discussed during our telephone conversation of June 7, 1984, we provide this caution statement since combustion conditions can exist where ketones are in high concentrations such as solvent recovery systems or vapors being emitted from ketone storage tanks. Even in these extreme cases, carbon containment systems can be used safely if ~~severe~~ SEVERAL important operational conditions are carefully addressed.

In your application, where trace amounts will be present in combination with other organics, we don't feel that a dangerous situation will develop for the following reasons:

1. In those situations where high concentrations of ketones are present, pre-wetting the carbon with water or controlling the humidity of the vapor to greater than 50% RH will provide enough heat sink on the carbon to quench any exotherm if the reaction begins. In your case, the vapors will be approaching 100% RH which will provide more than enough water content on the carbon to accomplish the quench.

2. Your concentrations are so very low that it is unlikely that any "critical mass" will develop over time to cause a problem even if the water was not present.

3. The design of the N-1000 is such that the shallower bed of carbon used will allow much more rapid head dissipation than the deep beds used in solvent recovery systems where heat transfer is very inefficient under no flow conditions.

Combining all three factors together should produce a safe situation by a large margin.

If you have any other questions, please don't hesitate to call or write to us at any time.

Very truly yours,

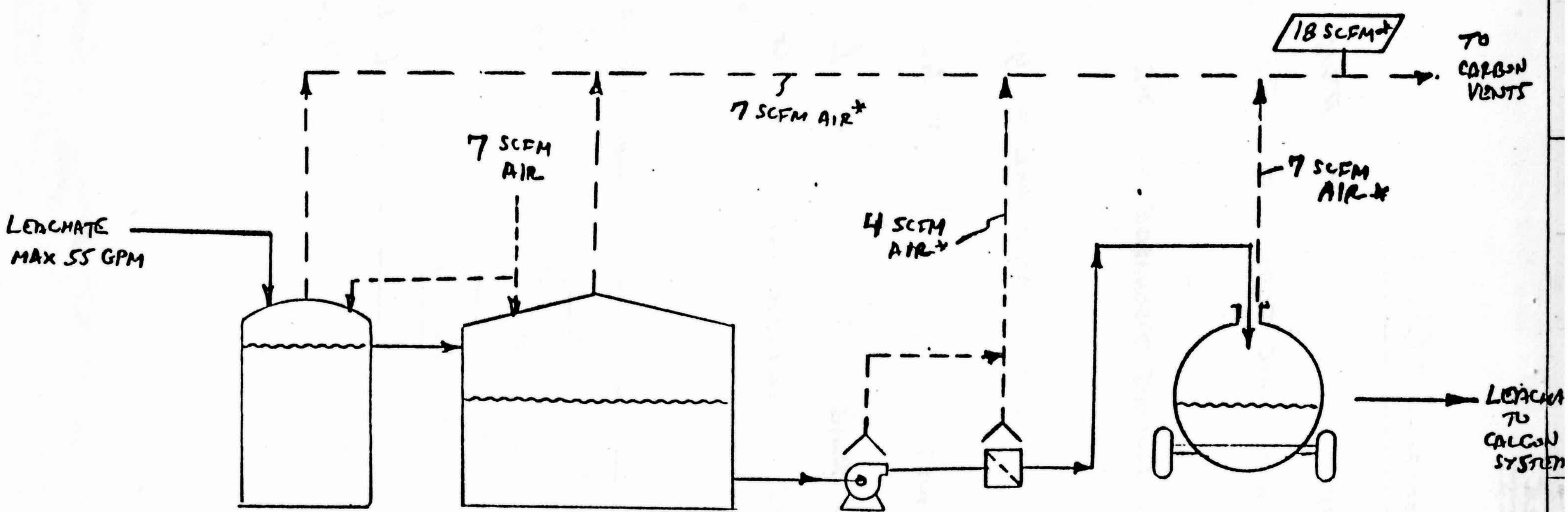
R S Byron

R. S. Byron

RSB/mc

Attachment "C"

HYDE PARK
LEACHATE STORAGE SYSTEM (SKETCH #1)

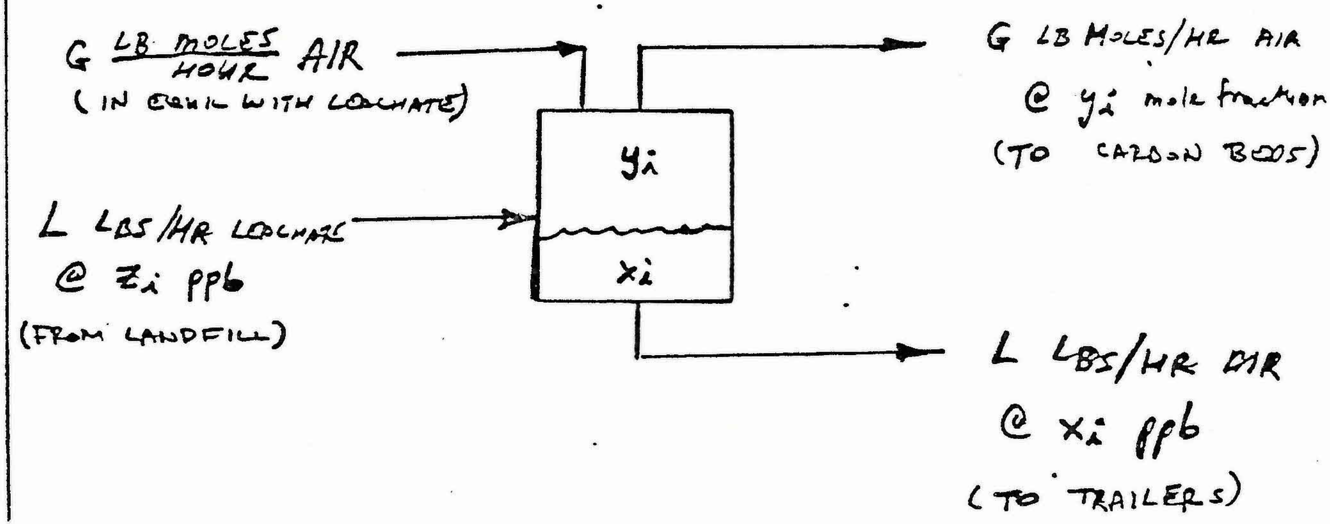


* IN EQUILIBRIUM WITH LEACHATE
(TIME AVERAGE OVER 24 HOURS)

MATERIAL BALANCE

FOR EACH COMPONENT (i):

			UNITS
MOLECULAR WT	=	MW_i	gm/gm mole
WT FRACTION IN LEACHATE FEED	=	Z_i	parts/billion (ppb) by weight
WT FRACTION IN LEACHATE DISCHARGE	=	X_i	parts/billion (ppb) by weight
MOLE FRACTION IN CONTAMINATED AIR	=	y_i	atmospheres
Henry CONSTANT	=	H_i	$\frac{\text{atm m}^3}{\text{gm mole}}$
LEACHATE FLOW RATE	=	L	LBS/HR
AIR FLOW RATE (IN EQUILIBRIUM)	=	G	LB MOLES/HOUR



O/A MATERIAL BALANCE: $L\, z_i(10^{-9}) = L\, x_i(10^{-9}) + G\, y_i(MW_i)$

EQUILIBRIUM RELATIONSHIP: $y_i = \dfrac{H_i}{(1000)(MW_i)} x_i$

SOLUTION $\Rightarrow$ $x_i = \dfrac{z_i}{1 + \frac{H_i G}{L}(10^6)}$

$$y_i = \frac{H_i\,(10^{-3})}{MW_i\left(1 + \frac{H_i G}{L}(10^6)\right)}\, z_i$$

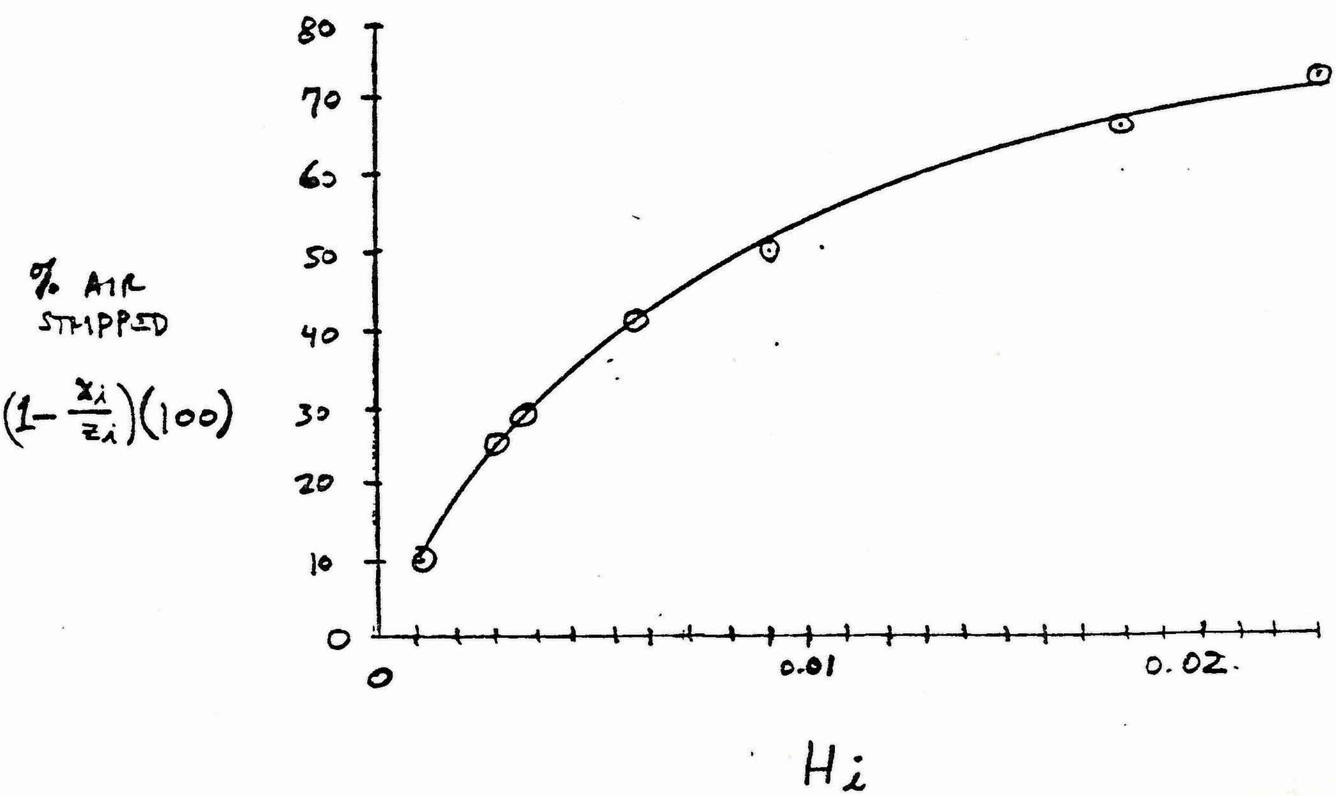
@ HYDE PARK:

$L(\text{MAX}) = 55 \text{ gpm} \times 500 = 27{,}500 \dfrac{\text{LBS}}{\text{HR}}$ WATER

$G(\text{TIME AVG max}) = \dfrac{18 \text{ SCFM} \times 60 \text{ MIN/HR}}{359 \text{ SCFT/LB MOLE}} = 3 \dfrac{\text{LB MOLES}}{\text{HOUR}}$ AIR

FROM TABLE 1

COMPONENT (i)	mw_i (gm/mole)	z_i (ppb)	H_i (atm m³/mole)	x_i (ppb)	y_i (atm) $\times 10^6$
CARBON TETRACHLORIDE	154	1300	0.023	370	57
TRICHLOROETHYLENE	131	3200	0.009	1615	113
BENZENE	78	5500	0.005	3559	229
TETRA CHLOROETHYLENE	166	6700	0.018	2261	248
TOLUENE	92	2300	0.005	1488	84
MISC. ORGANICS:					
CHLOROFORM	119	3500	0.003	2636	68
CHLOROBENZENE	113	2000	0.0036	1436	51
ETHYL BENZENE	106	1100	0.0064	648	41
OTHER	~120	2900	~0.001	2615	24



CARBON CHANGEOUT TIMES

① TANK VENT ADSORBER (1 UNIT)

Σ INPUT TO TANK VENT ADSORBER = 2.9# ORGANICS/DAY
(EQPT ID # 001)

@ 100 ppm IN VAPOR → CARBON LOADS @ ~ 25% ORGANICS

$$\Theta = \frac{400\# \text{ CARBON} \times 0.25 \#\text{o}/\#\text{c}}{2.9 \#\text{o}/\text{DAY}} \approx 34.4 \text{ DAYS}$$

34.4/365 ≅ 0.1 YEAR/CHANGE

② LEACHATE HANDLING VENT

Σ INPUT TO ADSORBERS (3) = 5# ORGANICS/DAY
(EQPT ID # 002)

$$\Theta = \frac{(400 \times 3)\# \text{ CARBON} \times 0.25 \#\text{o}/\#\text{c}}{5 \#\text{o}/\text{DAY}} = 60 \text{ DAYS}$$

60/365 = 0.16 YEAR/CHANGE

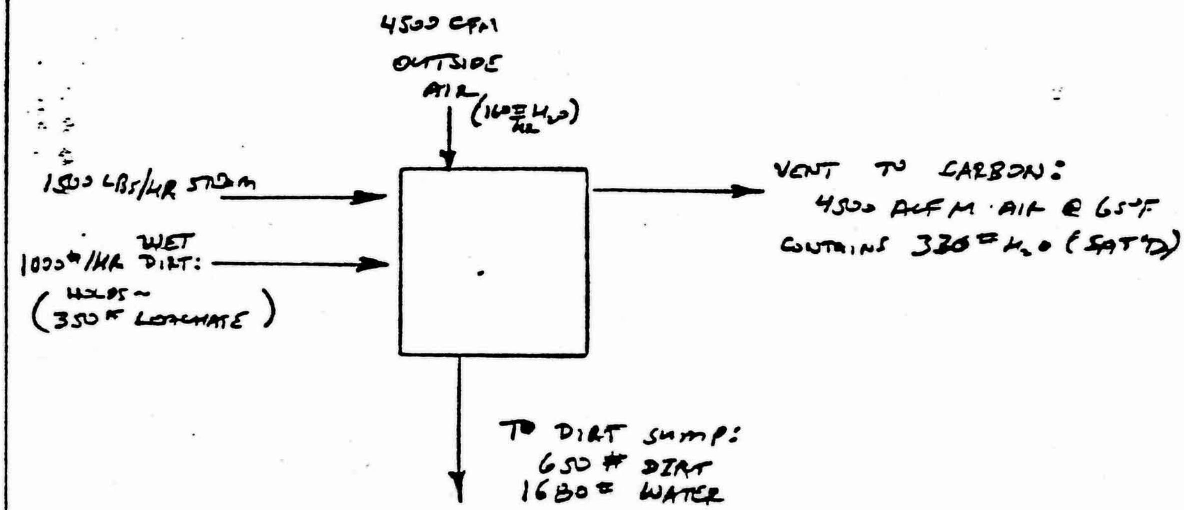
TABLE 1. SELECTED PARAMETERS FOR RANKING HAZARDOUS WASTE MATERIALS

Volatiles	$(z)_i$ Leachate Conc. (ppb)	Ingestion Criteria (mg/liter)	Bio-Concentration	Vapor Pressure (mmHg @ 20°C)	Solubility $\times 10^4$ (gm/gm H_2O)	$(H)\times10^{2}$ Henry's Law (atm m³/mole)	K_{ow}	K_{oc}	$H \cdot z_i (\times 10)$
CHLOROETHANE	100	-	-	1000	37.4	1.46	30.9	17	15
METHYLENE CHLORIDE	1500	12,000	.91	362	170	.23	18.2	10	35
TRICHLOROFLUOROMETHANE	0	3,200	-	667	11	10.9	331	182	[illegible]
1,1-DICHLOROETHYLENE	18	.03	5.61	591	4.0	18	69	38	32
TRANS-1,2-DICHLOROETHYLENE	14	-	-	326	6.0	6.9	17.4	9.6	10
CHLOROFORM	3500	.19	3.75	151	82	.3	91	5	105
1,2-DICHLOROETHANE	360	.94	1.2	61	86	.09	30	16	3
1,1,1-TRICHLOROETHANE	78	19,000	-	123	7.2	3	316	174	2
CARBON TETRACHLORIDE	1300	.42	18.75	90	7.8	2.3	912	502	279
1,2-DICHLOROPROPANE	64	490	4.1	42	27	.23	105	57	2
TRICHLOROETHYLENE	3200	2.79	10.6	58	11	.9	69	38	288
BENZENE	5500	.67	5.2	95	18	.5	135	74	275
1,1,2-TRICHLOROETHANE	710	.61	4.5	19	45	.07	117	64	5
1,1,2,2-TETRACHLOROETHYLENE	6700	.88	30.6	14	1.6	1.8	740	360	1206
TOLUENE	2300	14,000	-	22	5.4	.5	617	339	115
CHLOROBENZENE	2000	504	10.3	12	4.9	.36	692	380	72
ETHYL BENZENE	1100	800	-	7	1.5	.64	2190	1200	70
Acid Extractable									
2-CHLOROPHENOL	420	-	-	1.8	290	.001	154	83	0.0
PHENOL	82,000	3,500	1.4	.34	930	.00005	29	16	0.4
2,4-DICHLOROPHENOL	5,400	-	-	.06	46	.0002	794	437	0.1
2,4,6-TRICHLOROPHENOL	2,000	1.8	150	.01	8	.0003	4070	2240	0.1
Base Neutral									
TCDD	1.5	-	-	-	.00002	-			
Pesticides									
ALPHA-BHC	41	.013	130	.00002	.016	.0005	7760	4270	
GAMMA-BHC	120	.026	130	.00016	.075	.0008	7760	4270	
Metals									
ANTIMONY	44	146	-						
ARSENIC	49	.002	44						
BERYLLIUM	4	.004	19						
CADMIUM	300	10	-						
CHROMIUM	71	.00002	16						
COPPER	61	-	-						
LEAD	620	50	-						
NICKEL	20,000	15.5	41						
SILVER	1	8	-						
THALLIUM	39	18.5	-						
ZINC	2000	-	-						

$\left(\frac{\mu g}{liter}\right)$

$$\boxed{\frac{\left(\frac{\mu g}{liter}\right)}{1000} = \frac{gm}{m^3} = (a) \qquad \frac{(a)\times H}{Mw} = \frac{\frac{gm\ atm}{mole}}{MW} = atm \doteq y^*}$$

WASH BUILDING VENT



SAY THAT 85% OF ALL ORGANICS ARE AIR STRIPPED:

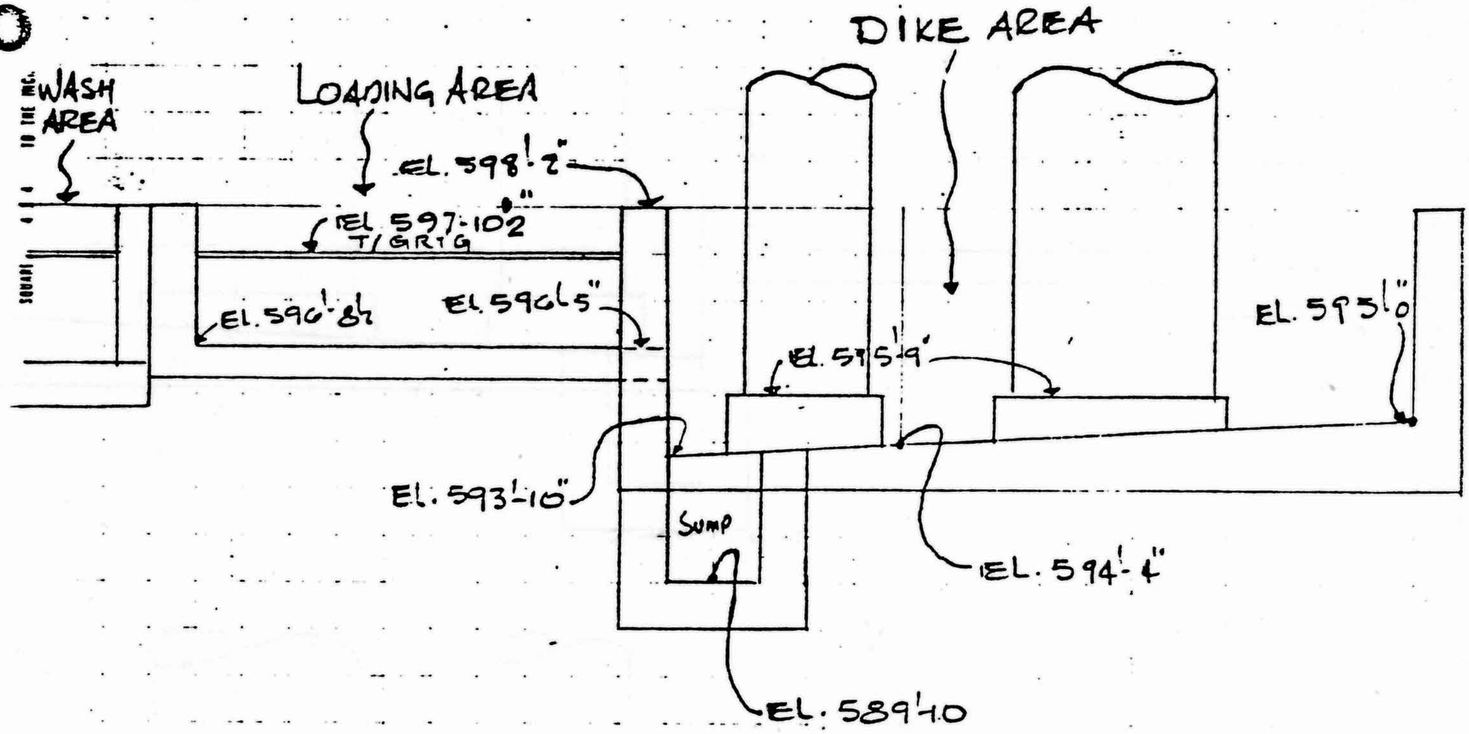
COMPONENT	LEACHATE ppm (WT)	#/DAY IN DIRT LBS (10^{-3})	#/DAY TO AIR (10^{-3})	
CARBON TET	1.3	3.7	3.2	
TRICHLORETHYLENE	3.2	9.0	7.7	
BENZENE	5.5	15.4	13.1	
TETRA CHL ETHYLENE	6.7	18.8	16.0	
TOLUENE	2.3	6.5	5.5	
MISC. CHLOROFORM	3.5	9.8	8.3	22.6
MISC. CHLOROBZ	2.0	5.6	4.8	
MISC. ETHYL BZ	1.1	3.1	2.6	
MISC. OTHER	2.9	8.1	6.9	
			68.1	

$$\theta = \frac{(4\text{ FILTERS})(90\#/\text{FILTER})\overset{\%\text{ LOADING}}{(0.07)}}{.068\ \#/\text{DAY}} = 370\text{ DAYS} \approx 1\text{ YEAR/CHANGE}$$

$$\bar{y} = \frac{68(10^{-3})/120}{\frac{(4500)(480)}{360}} = 0.1\text{ ppmv ORGANIC TO CARBON}$$

ATTACHMENT "D"

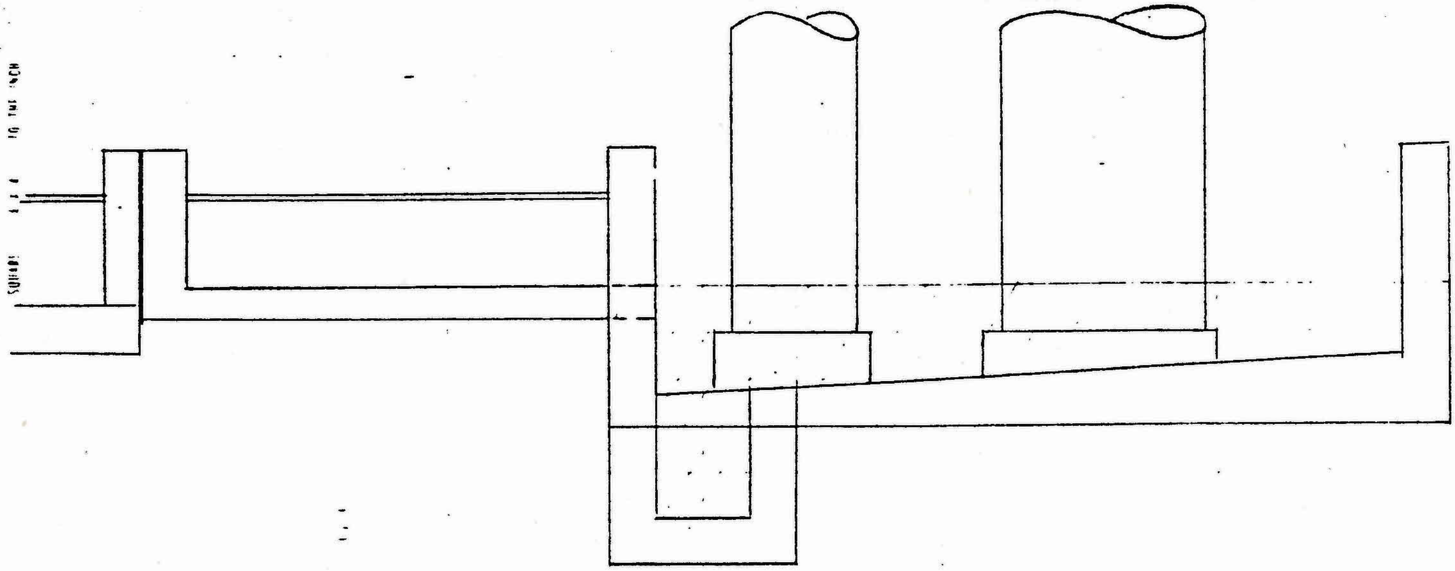
BY S.J.K. DATE 8/84 SUBJECT HYDE PARK N.F. SHEET NO. 10 OF 10A
CHKD. BY ______ DATE ______ JOB NO. 817-537
L1111

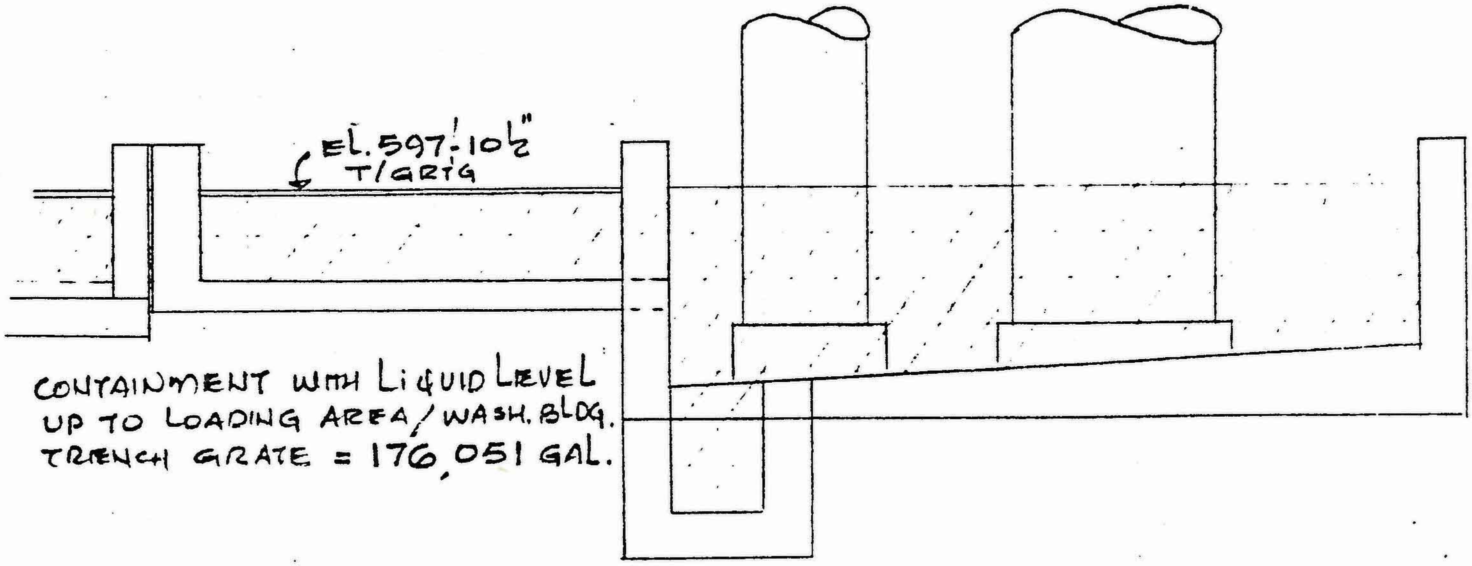


BY ____ DATE 8/84 SUBJECT ____ SHEET NO. ____ OF ____

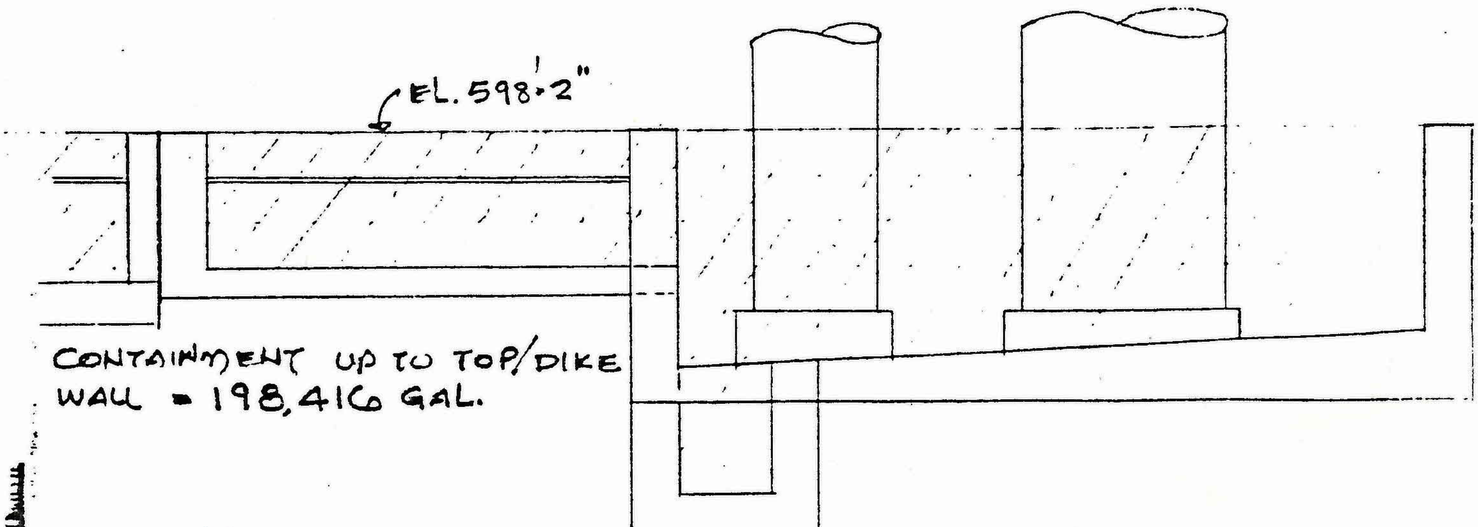
CHKD. BY ____ DATE ____ JOB NO. ____

CONTAINMENT VOLUME BREAK DOWN





CONTAINMENT WITH LIQUID LEVEL
UP TO LOADING AREA / WASH. BLDG.
TRENCH GRATE = 176,051 GAL.



CONTAINMENT UP TO TOP/DIKE
WALL = 198,416 GAL.

BY D.V.D. DATE 9/04 SUBJECT [illegible] SHEET NO. ____ OF ____
CHKD. BY ______ DATE ______ JOB NO. ______

CAPACITY OF CONTAINMENT AREA FOR HYDE PARK STORAGE

(A) CALCULATE CONTAINMENT VOL. OF DIKED AREA UP TO EL. 597'-10½"

① LARGE STORAGE AREA:
AREA = (108' × 64.83') AVG. HT = EL. 597'-10½ − (EL 594'-4 + EL 595'-5)/2
= 7001.64 □' = 3.2085'
∴ VOLUME = 22,464.760 CFT × 7.48 — 168,0360 GA

② SMALL STORAGE AREA
A = 50.17 × 24.16 = 1212.1 □' AVG. HT. = 597.875 − (593.833 + 594.333)/2
= 3.792'
∴ VOLUME = 4596.28 CFT. × 7.48 — 34,380.2 GA

③ SUMP: VOL = (597.875 − 589.833) × 4.5 × 4.5 = 162.850 CFT × 7.48 — 1,218.12 GA

④ VOLUME IN TRENCHES: USE AVG. HT. FOR SLOPED TRENCH
ⓐ WASH BLDG TRENCH:
597.875 − (596.33 + 596.08)/2] × 1'-0 × 23.25 = 38.83 CFT × 7.48 — 290.45 G

ⓑ LOADING RAMP:
[597.875 − (596.708 + 596.416)/2] × 1'-0 × 32.42 = 42.57 CFT — 318.42
204,243.2

NOW REDUCTION IN VOLUME DUE TO PADS, TANKS ETC.
2 LARGE PADS = 0.8284 × 31² × (595.75 − 594.55) × 2 = 1910.62 CFT — 14,291.45
1.2

1 SMALL PAD = 0.8284 × 11.5² × (595.75 − 594.17) = 173.1 CFT — 1,294.78
2.125
1 LARGE TANK = 0.785 × 30² × (597.875 − 595.75) = 1501.3 CFT. — 11,229.8
1 SMALL TANK = 0.785 × 10.5² × 2.125 = 183.91 CFT — 1,375.6
28,191.7

∴ NET CONTAINMENT VOLUME = 204,243.2 − 28,191.7
= 176051.5 GAL.

(B) VOLUME TO BE CONTAINED FOR RUPTURE OF ONE TANK & 2.1" OF RAIN OVER ENTIRE AREA:
1 YEAR - 24 HR STORM

NOW SURFACE AREA FOR RAIN:

∴ DIKE = (108 × 64.83) + (50.17 × 24.16)
= 7001.64 + 1212.11 = 8213.74 ☐

PUMP HOUSE ROOF = 30'-0 × 24'-8 = 740.10 ☐

LOADING PAD = 118 × 32.92 + 24.17 × 28.29
= 3884.56 + 683.77 = 4568.33 ☐

13,522.17 ☐

∴ VOLUME OF RAIN (2.1") = $13{,}522.17 \times \frac{2.1}{12} \times 7.48$
= 17,700 GAL

VOLUME OF ONE LARGE TANK = $0.785 \times 30^2 \times 29.16$
= 20,602 CFT × 7.48
= 154,100 GAL.

∴ TOTAL VOLUME (ONE TANK + 2.1" RAIN)
= 154,100 + 17,700 = 171,800 GAL. < 176,051.5 GAL
P1
∴ O.K

BY S.J.K. DATE 8/84 SUBJECT [illegible] TANK, N.Y. SHEET NO. 2 OF

CHKD. BY DATE JOB NO.

(C) CALCULATE CONTAINMENT VOLUME OF DIKED AREA UP TO EL. 598'-2"

NOW VOLUME UP TO EL. 597'-10½ = 176,051.5 GAL.

ADDITIONAL VOLUME (TO EL. 598'-2) = $8213.74^{\square} \times (598'\text{-}2 - 597'\text{-}10\tfrac{1}{2}) = 2396.0^{CF}$

VOL. OF LOADING PAD = $(\overset{31.5}{33'\text{-}11} - 1'\text{-}0 - 1'\text{-}6) \times 58'\text{-}4 \times \left(\dfrac{\overset{0.145}{598'\text{-}2 - 597'\text{-}10\tfrac{1}{2}}}{2} \times 2\right)$

$+ 24.5 \times 25.62 \times 0.12$

$= 531.50 + 75.32 \qquad = 606.82^{CFT}$

VOL. OF SUMP $= 4.5 \times 4.5 \times 0.29 \qquad = 5.87^{CFT}$

VOL. OF WASH BLDG. $= 30'\text{-}4'' \times \dfrac{0.29}{2} \times 24 \times 2 \qquad = \underline{211.10}^{CFT}$

3219.80^{CFT}

NOW VOL. TO BE DEDUCTED:

ONE LARGE TANK $= 0.785 \times 30^2 \times 0.29 = 204.89^{CFT}$

ONE SMALL TANK $= 0.785 \times 10.5^2 \times 0.29 = \underline{25.10}^{CFT}$

229.99^{CFT}

∴ NET VOLUME $= 3219.80 - 229.99 = 2589.81 \times 7.48 = 22,363.78^{G}$

∴ TOTAL VOLUME TO EL. 598'-2

$= 176,052 + 22,364 \qquad = \underline{198,416 \text{ GAL.}}$

(D) VOLUME TO BE CONTAINED FOR RUPTURE OF ONE TANK + 4.5" RAIN (100 YEAR / 24 HR STORM)

VOL. (SURFACE AREA (P. 2)) $= 13,522.17^{\square} \times \dfrac{4.5}{12} \times 7.48$

$= 37,929.7$ GAL.

VOL. OF ONE TANK = 154,178 GAL

∴ TOTAL VOLUME $= 154,100 + 37,929.7$

$= 192,030$ GAL. < 198,416 GA

∴ OK.

MJH

Peter Buechi
Mark Hans Mark
Hooker Hyde Park Storage Facility

January 27, 1984

I have reviewed the information which you recently gave me regarding containment volume, for the Hyde Park Leachate Storage Facility and I have the following comments:

1. The elevations provided by OCC on their 12/83 computation sheets do not agree with the elevations provided on plan sheets A-11-17916 through A-11-17925. OCC should advise which elevations are to be used. If the calculation sheet elevations are correct, revised plans should be submitted.

2. I feel that a 100 year 24-hour storm plus the volume of the largest tank should be contained by the facility. At a minimum, a 10 year 24-hour storm plus the volume of the largest tank should be contained below the top of the trench in the Loading Pad/Wash Building. As can be seen on sheet 8 of 8 (attached calculations), neither of these design conditions are met by the data that has been supplied to our office (plan sheets or computation sheet - see 1 above).

Therefore, I would suggest that OCC be required to submit a revised containment system design that meets the requirements of #2 above. They should also submit detailed calculations that justify their containment system design.

I am attaching to this memo a copy of my detailed calculations along with the computation sheet provided by OCC.

vs
Attachment
cc: Ed Belmore
Jim Wilding/with att.
Roger Murphy/with att.

Comments: (Pg 1) 48.67' dimension should be 50.17'

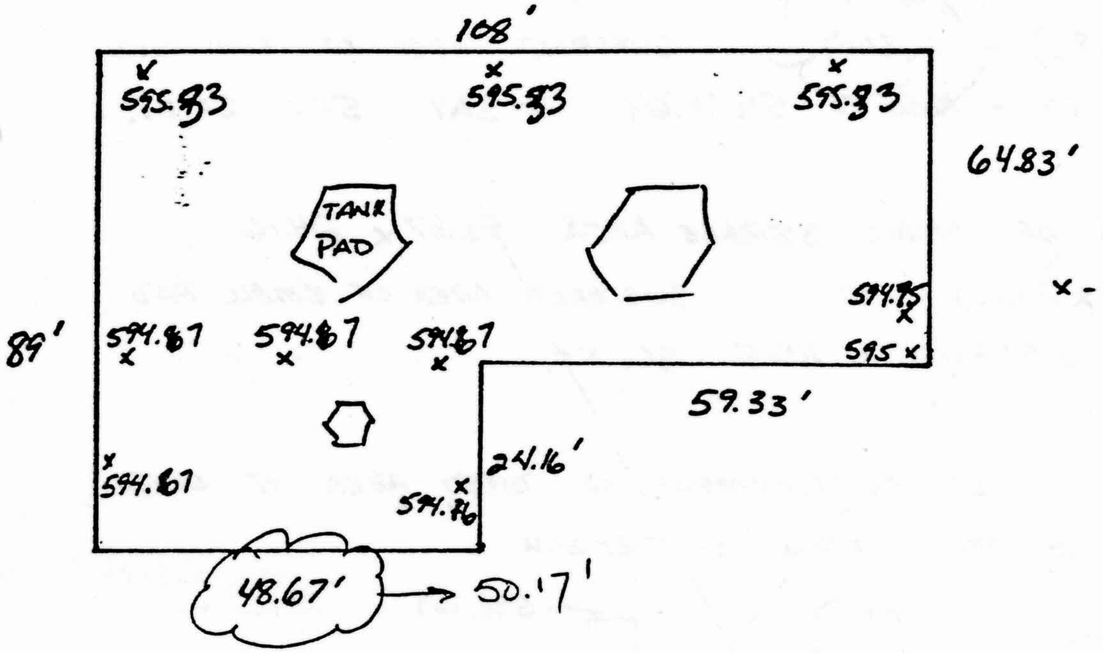
(Pgs 2 thru 4) Don't use Dwg. Elevs, They are incorrect. Use Elevs per attached OCC Calc Sheet 10

(Pg 2) Only (1) tank volume should have been deducted

(Pg 8) Corrected Dike Volume is now 197.000 gals which is close to OCC's calculated 198.416 ga.

Jim Hawes

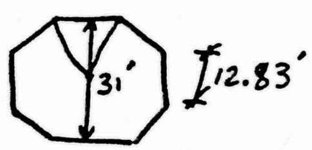
CAPACITY OF CONTAINMENT AREA FOR HYDE PARK STORAGE



x - ELEVATION

ALL DIMENSIONS AND PLANS FROM SHEETS A-11-17915 THRU A-11-17925

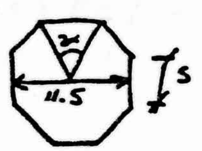
① CALCULATE AREA OF LARGE TANK PADS



ASSUME 8 Δ $\quad \frac{1}{2}bh = \frac{1}{2}(12.83)(15.5) = 99.5$

AREA PAD $= 8 \times 99.5 = 796$ SQ FT SAY 800 SQ FT/PAD

② CALCULATE AREA OF SMALL TANK PAD



$$s = 2\left(\tfrac{11.5}{2}\right)\tan(\alpha) \qquad \alpha = 22.5$$

$$= 2(5.75)(\tan(22.5))$$

$$= 2(5.75)(.414) = 4.761$$

$$A = \frac{8(4.761)(5.75)}{2} = 109.5 \quad \text{SAY } 110 \text{ SQ FT.}$$

Should only be (1) tank deducted

③ CALCULATE AREA OF LARGE STORAGE AREA 108 x 64.83

$(108 \times 64.83) - 2(800)$ SUBTRACT AREA OF BOTH PADS

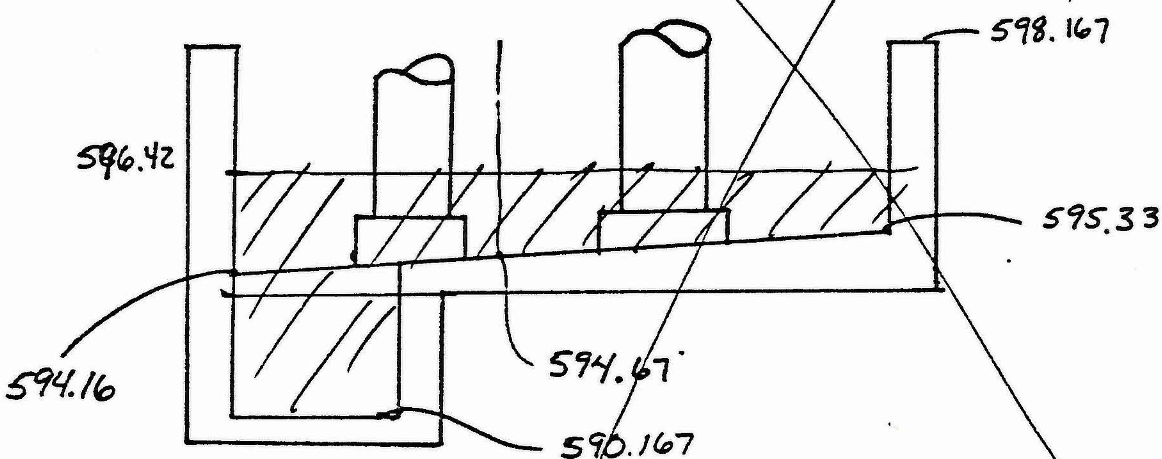
$7001.64 - 1600 = 5401.64$ SAY 5400 SQ. FT.

④ CALCULATE AREA OF SMALL STORAGE AREA 48.67 x 24.16

$(48.67 \times 24.16) - 110$ SUBTRACT AREA OF SMALL PAD

$1175.9 - 110 = 1065$ SQ. FT.

⑤ CALCULATE VOLUME OF CONTAINMENT IN DIKED AREA IF LEVEL ALLOWED TO RISE TO BOTTOM OF TRENCH



a) FOR LARGE AREA BREAK INTO RECTANGULAR & TRIANGULAR SECTIONS

$VOL_R = (596.42 - 595.33) \times 5400 = 5886$ CU. FT.

VOL_T - ASSUME $h_{AVG} = (595.33 - 594.67)/2 = .33$ FT

$VOL_T = .33 \times 5400 = 1782$ CU FT.

b) FOR SMALL AREA BREAK INTO RECTANGULAR & TRIANGULAR SECTIONS

$VOL_R = (596.42 - 594.67) \times 1065 = 1864$ CU FT.

VOL_T - ASSUME $h_{AVG} = (594.67 - 594.16)/2 = .255$ FT

$VOL_T = .255 \times 1065 = 272$ CU FT

c) VOL OF SUMP $(596.42 - 590.167) \times 4.5 \times 4.5 = 127$ CU FT

d) TOTAL VOLUME

$5886 + 1782 + 1864 + 272 + 127 = 9931$ CU FT

9931 CU FT $\times$ 7.48 g/CU FT $= 74{,}280$ gal

⑥ CALCULATE CONTAINMENT VOLUME IF LIQUID LEVEL ALLOWED TO RISE TO TOP OF TRENCH

TOP OF TRENCH ELEVATION = 597.833

a) ADDITIONAL VOLUME IN TANK FARM

$(597.833 - 596.42) \times (5400 + 1065) = 9135$ CU FT

b) ADDITIONAL VOLUME IN SUMP

$(597.833 - 596.42) \times 4.5 \times 4.5 = 28.6$ CU FT

c) VOLUME IN TRENCH

SINCE TRENCHS ARE SLOPED USE AVERAGE HEIGHT

- WASH BUILDING TRENCH

$[597.833 - (596.33 + 596.08)/2] \times 1 \times 24 = 39$ CU FT

- LOADING RAMP

$[597.833 - (596.708 + 596.416)/2] \times 1 \times 32 = 41$ CU FT

CAPACITY $(39 + 41) \times 7.48 = 598$ gal SAY 600

d) TOTAL CAPACITY TO TOP OF TRENCH DRAIN

$(9135 + 29 + 39 + 41) \times 7.48 = 69{,}145$ gal

$69{,}145 + 74{,}280 = \underline{143{,}425 \text{ gal}}$

7) CALCULATE CONTAINMENT VOLUME IF LIQUID LEVEL ALLOWED TO RISE TO TOP OF CONTAINMENT DIKE

TOP OF CURBING — 598.167

a) ADDITIONAL VOLUME IN TANK FARM (ABOVE THAT IN 6)

$(598.167 - 597.833) \times (5400 + 1065) = 2160$ CU FT.

b) ADDITIONAL VOLUME IN SUMP

$(598.167 - 597.833) \times (4.5 \times 4.5) = 7$ CU FT

c) ADDITIONAL VOLUME IN TRENCHS

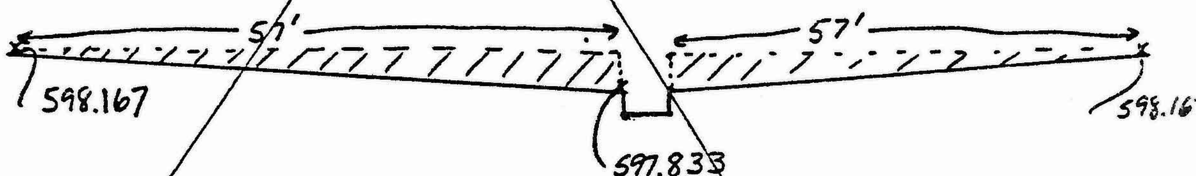
- WASH BUILDING

$(598.167 - 597.833) \times 1 \times 24 = 8$ CU FT

- LOADING AREA

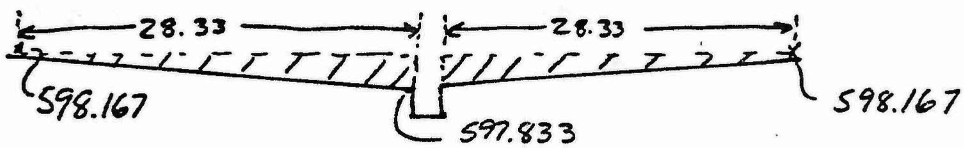
$(598.167 - 597.833) \times 1 \times 32 = 11$ CU FT

d) VOLUME ON LOADING PAD FLOOR USE 33.917' WIDE



$VOL = ((598.167 - 597.833)/2) \times 57 \times 33.917 \times 2 = 646$ CU FT

e) VOLUME ON WASH BUILDING FLOOR USE 24' WIDE



$VOL = ((598.167 - 597.833)/2) \times 28.33 \times 24 \times 2 = 227$ CU. FT.

f) ADDITIONAL VOLUME $(2160 + 7 + 8 + 11 + 646 + 227) \times 7.48 = 22{,}900$ gal

g) TOTAL CONTAINMENT

143,425 + 22,900 gal = 166,325 gal WITH LEVEL OF WATER AT TOP OF CURBING 598'-2".

NOW RECALCULATE CONTAINMENT VOLUMES USING ELEVATIONS PROVIDED BY OCC. COMPUTATION SHEET DATED 12/83.

① CALCULATE VOLUME OF CONTAINMENT IN DIKED AREA IF LEVEL ALLOWED TO RISE TO BOTTOM OF TRENCH (SEE STEP 5 OF PREVIOUS CALCULATIONS)

a) VOLUME LARGE AREA

$VOL_R = (596.42 - 595.0) \times 5400 = 7668$ CU FT

$VOL_T = (595 - 594.33)/2 \times 5400 = 1809$ " "

b) VOLUME SMALL AREA

$VOL_R = (596.42 - 594.33) \times 1065 = 2226$ CU FT

$VOL_T = (594.33 - 593.83)/2 \times 1065 = 266$ CU FT

c) VOLUME OF SUMP

$(596.42 - 589.83) \times 4.5 \times 4.5 = 133$ CU FT

d) TOTAL VOLUME

$7668 + 1809 + 2226 + 266 + 133 = 12,102$ CU FT

$12,102 \times 7.48 = 90,500$ gal

② CALCULATE CONTAINMENT VOLUME IF LIQUID LEVEL ALLOWED TO RISE TO TOP OF TRENCH

TOP OF TRENCH ELEV. 597.833

a) ADDITIONAL VOLUME IN TANK FARM

$(597.833 - 596.42) \times (5400 + 1065) = 9135$ CU FT

b) ADDITIONAL VOLUME IN SUMP

SAME AS 6b 28.6 CU FT

c) VOLUME IN TRENCH

SAME AS 6c 80 CU FT

d) TOTAL CAPACITY TO TOP OF TRENCH DRAIN

$12,102 + 9135 + 30 + 80 = 21347$ CU FT

$21347 \times 7.48 = 159,675$ gal

③ CALCULATE CONTAINMENT VOLUME IF LIQUID LEVEL ALLOWED TO RISE TO TOP OF CURBING 598'-2"

a) ADDITIONAL VOLUME IN TANK FARM

SAME AS 7a 2160 CU FT

b) ADDITIONAL VOLUME IN SUMP

SAME AS 7b 7 CU FT

c) ADDITIONAL VOLUME IN TRENCHS

SAME AS 7c 19 CU FT

d) VOLUME ON LOADING PAD FLOOR

SAME AS 7d 646 CU FT

e) VOLUME ON WASH BUILDING FLOOR

SAME AS 7e 227 CU FT.

f) TOTAL ADDITIONAL VOLUME

SAME AS 7f 3059 CU FT

g) TOTAL CONTAINMENT VOLUME IF LIQUID LEVEL ALLOWED TO RISE TO TOP OF CURBING

$21347 + 3059 = 24,406$ CU FT

$24,406 \times 7.48 = 182,550$ gal.

CALCULATE VOLUME ADDED BY RAINFALL

1 YR / 24 HR	STORM	2.1" RAIN
10 YR / 24 HR	STORM	3.4" RAIN
100 YR / 24 HR	STORM	4.5" RAIN

① AREA EXPOSED TO RAIN

DIKED AREA = $(108 \times 65) + (24 \times 49) = 8196$ SQ FT

LOADING PAD = $(118 \times 34) + (24 \times 28) = \underline{4684}$ SQ FT

12,870 SQ FT.

1 YR/24 hr	STORM	$12,870 \times \frac{2.1}{12} = 2252 \times 7.48 =$ 16,850 gal
10 YR/24 hr	STORM	$12,870 \times \frac{3.4}{12} = 3646 \times 7.48 =$ 27,270 gal
100 YR/24 hr	STORM	$12,870 \times \frac{4.5}{12} = 4826 \times 7.48 =$ 36,100 gal

Add dike volume of (1) large tank previously
deduct (1)(800SF)(2.415') = 1932 CF x 7.48
= 14,451 gal

① IF LIQUID IS ALLOWED TO RISE TO TOP OF CURBING ∴ SHOULD BE ABLE TO HOLD VOLUME OF TANK + 24 hr/100 yr STORM

PLAN ELEVATIONS SHOW CAPACITY = ~~166,325~~ gal VOID
COMP. SHEET " " " = 182,550 gal + 14,451 = 197,001 gal

TOTAL CAPACITY TANK = 158,000 gal
VOLUME 24 hr/100 yr STORM = 36,100 gal
194,100

OCC Calc's
154,178 gal
37,929
192,107 gal

IN NEITHER CASE IS CAPACITY ADEQUATE

② IF LIQUID IS ALLOWED TO RISE TO TOP OF TRENCHES ∴ SHOULD BE ABLE TO HOLD VOLUME OF TANK + 10 yr/24 hr STORM (AS A MINIMUM).

TOTAL CAPACITY TANK = 158,000 gal
VOLUME 10 yr/24 hr STORM = 27,270 gal
185,270

PLAN ELEVATIONS SHOW CAPACITY = 143,425 gal
COMP SHEET " " " = 159,675 gal

IN NEITHER CASE IS CAPACITY ADEQUATE